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Notice of Allowability

Application No.

09/710,163

Examiner

Haresh Patel

Applicant(s)

SHOREY ET AL.

Art Unit

2154

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 6/2/2004.
2. ☒ The allowed claim(s) is/are 1-36.
3. ☒ The drawings filed on 10 November 2000 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 7/23/2004.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.


JOHN FOLLANSBEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Mohammad S. Rahman on July 16, 2004.
3. The application has been amended as follows:

Claim 1: (Currently Amended) A method of allocating bandwidth of a limited bandwidth link to among dataflows comprising packets, said method comprising:

adaptively adjusting a number of buckets dependent upon a number of active dataflows of said dataflows, where wherein each bucket comprises a number of tokens allocated to said bucket for use by a corresponding dataflow of said active dataflows, said number of tokens dependent upon a weighted value ~~for~~ of said corresponding dataflow, wherein queuing of said packets for utilization of said limited bandwidth link is dependent upon said number of tokens; and

adaptively reallocating said tokens among said ~~to at least one bucket~~ buckets in accordance with a weighted value of ~~for~~ each of said dataflows,

wherein each said bucket is operable for maintaining a record of past usage of an outgoing bandwidth link by each ~~incoming~~ dataflow of said dataflows,

wherein each said bucket comprises a height proportional to weights of respective said incoming dataflows, wherein said height of each said bucket determines a maximum size of bursts of said dataflows that can be accommodated by said buckets, and

wherein a an allocation rate at which said tokens the number of tokens of a predetermined number of tokens of said dataflows are allocated to said buckets is proportional to said weights of respective incoming said dataflows such so that a

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cumulative rate of all the allocation rates equals a fixed transmission capacity of said bandwidth link.

Claim 13: (Currently Amended) A system for allocating bandwidth of a limited bandwidth link to among dataflows comprising packets, said system comprising:

means for adaptively adjusting a number of buckets dependent upon a number of active dataflows of said dataflows, where wherein each bucket comprises a number of tokens allocated to said bucket for use by a corresponding dataflow of said active dataflows, said number of tokens dependent upon a weighted value ~~for~~ of said corresponding dataflow, wherein queuing of said packets for utilization of said limited bandwidth link is dependent upon said number of tokens; and

means for adaptively reallocating said tokens among said ~~to at least one bucket~~ buckets in accordance with a weighted value of ~~for~~ each of said dataflows,

wherein each said bucket is operable for maintaining a record of past usage of an outgoing bandwidth link by each ~~incoming~~ dataflow of said dataflows,

wherein each said bucket comprises a height proportional to weights of respective ~~said incoming~~ dataflows, wherein said height of each said bucket determines a maximum size of bursts of said dataflows that can be accommodated by said buckets, and

wherein a an allocation rate at which said tokens the number of tokens of a predetermined number of tokens of said dataflows are allocated to said buckets is proportional to said weights of respective ~~incoming~~ said dataflows ~~such so~~ that a cumulative rate of all the allocation rates equals a fixed transmission capacity of said bandwidth link.

Claim 25: (Currently Amended) A computer program product including a computer readable medium with a computer program recorded therein for allocating bandwidth of a limited bandwidth link to among dataflows comprising packets, said computer program product comprising:

means for adaptively adjusting a number of buckets dependent upon a number of active dataflows of said dataflows, where wherein each bucket comprises a number of

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tokens allocated to said bucket for use by a corresponding dataflow of said active dataflows, said number of tokens dependent upon a weighted value ~~for~~ of said corresponding dataflow, wherein queuing of said packets for utilization of said limited bandwidth link is dependent upon said number of tokens; and

means for adaptively reallocating said tokens among said ~~to at least one bucket~~ buckets in accordance with a weighted value of ~~for~~ each of said dataflows,

wherein each said bucket is operable for maintaining a record of past usage of an outgoing bandwidth link by each ~~incoming~~ dataflow of said dataflows,

wherein each said bucket comprises a height proportional to weights of respective said ~~incoming~~ dataflows, wherein said height of each said bucket determines a maximum size of bursts of said dataflows that can be accommodated by said buckets, and

wherein a an allocation rate at which said tokens the number of tokens of a predetermined number of tokens of said dataflows are allocated to said buckets is proportional to said weights of respective ~~incoming~~ said dataflows ~~such so~~ that a cumulative rate of all the allocation rates equals a fixed transmission capacity of said bandwidth link.

DETAILED ACTION

4. The amendment on July 16, 2004 is noted and made of record.
5. Claims 1-36, are presented for examination.

Allowable Subject Matter

6. Claims 1-36, are allowed.
7. Applicant's invention discloses a method / a system / storage medium, to implement allocating bandwidth of a limited bandwidth link to dataflows containing packets for congestion control over the network. The method includes adaptively adjusting the number of buckets dependent upon the number of active dataflows, where

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each bucket has a number of allocated tokens for use by a corresponding dataflow. The number of tokens allocated is dependent upon a weighted value for the corresponding dataflow and queuing of packets for utilization of the limited bandwidth link is dependent upon the tokens in the corresponding bucket. Tokens are adaptively reallocated to one or more buckets according to a weighted value for each of the dataflows. Each bucket is operable for maintaining a record of past usage of an outgoing bandwidth link by each incoming dataflow. The bucket comprises a height proportional to weights of respective incoming dataflow, wherein said height of each the bucket determines a maximum size of bursts of the dataflows that can be accommodated by the buckets. An allocation rate at which the number of tokens of a predetermined number of tokens of said dataflows are allocated to said buckets is proportional to said weights of respective incoming dataflow so that a cumulative rate of all the allocation rates equals a fixed transmission capacity of the bandwidth link.

The prior arts do not teach allocating bandwidth of a limited bandwidth link to incoming dataflows containing packets using the buckets and predetermined number of tokens that are allocated to the buckets according to the weight of respective incoming dataflow. The same predetermined number of tokens remain all the time, to allocate bandwidth of the bandwidth link, regardless of, how many number of buckets and number of incoming dataflows are present at a given time or the weights of incoming dataflows. The well-known leaky bucket algorithm to allocate bandwidth of a link using buckets and tokens do not use predetermined number of tokens that remain same number all the time. Therefore, the claims are allowable over the art of record.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Haresh Patel whose telephone number is (703) 605-5234. The examiner can normally be reached on Monday, Tuesday, Thursday and Friday from 10:00 am to 8:00 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee, can be reached at (703) 305-8498.

The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Haresh Patel

July 23, 2004


JOHN FOLLANSBEE
SUPERVISOR, PATENT EXAMINER
TECHNOLOGY CENTER 2100